# Socioeconomic status, working conditions and self-rated health in Switzerland: explaining the gradient in men and women

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Abstract: OBJECTIVES: Epidemiological research has confirmed the association between socioeconomic status (SES) and health, but only a few studies considered working conditions in this relationship. This study examined the contribution of physical and psychosocial working conditions in explaining the social gradient in self-rated health. METHODS: A representative sample of 10 101 employees, 5003 women and 5098 men, from the Swiss national health survey 2002 was used. SES was assessed according to the EGP-scheme. Working conditions included exposure to physical disturbances, physical strain, job insecurity, monotonous work and handling simultaneous tasks. For data analysis logistic regression analyses were performed. RESULTS: Data show a social gradient for self-rated health (SRH) as well as for physical and psychosocial working conditions. Logistic regression analysis controlling for age, gender and level of employment showed both physical and psychosocial working conditions to be significant predictors of SRH. Physical and psychosocial working conditions such as physical disturbances from work environment, physical strains in doing the job, monotony at work, job insecurity etc. could explain most of the social gradient of SRH in men and women. CONCLUSION: The study confirmed the relevance of modifiable physical and psychosocial working conditions for reducing social inequality in health. Gender differences need to be considered in epidemiological and intervention studies.

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**Original article**

# Socioeconomic status, working conditions and self-rated health in Switzerland: explaining the gradient in men and women

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**Abstract**

**Objectives:** Epidemiological research has confirmed the association between socioeconomic status (SES) and health, but only a few studies considered working conditions in this relationship. This study examined the contribution of physical and psychosocial working conditions in explaining the social gradient in self-rated health.

**Methods:** A representative sample of 10 101 employees, 5003 women and 5098 men, from the Swiss national health survey 2002 was used. SES was assessed according to the EGP-scheme. Working conditions included exposure to physical disturbances, physical strain, job insecurity, monotonous work and handling simultaneous tasks. For data analysis logistic regression analyses were performed.

**Results:** Data show a social gradient for self-rated health (SRH) as well as for physical and psychosocial working conditions. Logistic regression analysis controlling for age, gender and level of employment showed both physical and psychosocial working conditions to be significant predictors of SRH. Physical and psychosocial working conditions such as physical disturbances from work environment, physical strains in doing the job, monotony at work, job insecurity etc. could explain most of the social gradient of SRH in men and women.

**Conclusion:** The study confirmed the relevance of modifiable physical and psychosocial working conditions for reducing social inequality in health. Gender differences need to be considered in epidemiological and intervention studies.

**Keywords:** Socioeconomic status – Inequalities in health – Social gradient – Self-rated health – Physical and psychosocial working conditions.

International epidemiological research has shown the relation between socioeconomic status and health.[1–3] Bopp & Minder [4] could show mortality differences between educational groups for Swiss men and women in a representative, longitudinal study. Other studies from Switzerland showed that socioeconomic status is significantly associated with the incidence of diseases or self-reported illness symptoms and disorders.[5–7] Furthermore, there are Swiss studies showing that lower socioeconomic classes are more likely to get incapacitated and that male blue-collar workers and employees with a basic educational level report more back pain than others.[8,9] With respect to gender it could be shown that the social gradient in health is more distinct for men, as women show smaller social inequalities in health.[10–14] It is assumed that these smaller social inequalities in health are partially due to a different distribution of unhealthy employment status categories between women and men.[10,15,16]

Several international studies have identified various factors explaining socioeconomic inequalities in health,[17] but only few of the studies considered working conditions as part of its explanation. It is well established that psychosocial working conditions explain part of the association between cardiovascular risks and socioeconomic status (SES).[18,19] Other studies examined the relationship of psychosocial working conditions and SES-related differences in general health status, particularly looking at self-rated health.[15,20–22] In epidemiological research, measuring self-rated health (SRH) has a long tradition, being a very good predictor for future morbidity and mortality.[23,24] Two cross-sectional studies have analyzed physical and psychosocial working conditions simultaneously as causes of socioeconomic inequalities in health, using SRH as outcome. Schrijvers et al.[22] investigated 6932 working men and women in the Netherlands and identified physical work-

ing conditions and low job control as important mediators of the social gradient. Borell et al.[15] analyzed the role of working conditions, household material standards and household labor with regard to the association between socioeconomic status and SRH in Spanish employees. They could show that work organization variables (i.e. job insecurity, physical and psychosocial hazards) contributed in large part to the explanation of socioeconomic inequalities in SRH. Furthermore, their findings suggest differences with respect to the relationship between gender and work related risk factors. Other studies emphasize this fact by referring to a "gender-segregated labor market"[25], as job related risk factors differ between men and women and thus are having a different effect on the social gradient in health.[10,15,16,25]

With respect to Switzerland, one study analyzed the effects of job insecurity on health, including educational level as a moderator.[26] Based on a random sample of the Swiss population the study suggested that higher-educated employees had more difficulties in coping with job insecurity than lower-educated employees.

Regarding socioeconomic status and health there is still a limited scope of research with respect to the influence of working conditions on this relationship. Thus, the present study aimed to examine the association between different physical and psychosocial working conditions and the social gradient in self-rated health for employees in Switzerland, using representative data of the Swiss Health Survey. The following research questions were addressed:

1. How is SES related to SRH in a representative sample of Swiss employees?
2. How are physical and psychosocial working conditions (e.g. exposure to physical disturbances, physical strain, job insecurity, monotonous work) related to SES and to SRH?
3. To what extent can physical and psychosocial working conditions explain the social gradient of SRH?
4. Do physical and psychosocial working conditions differently account for the explanation of the social gradient in SRH for both women and men?

## Methods

The data originated from the Swiss Health Survey, which is carried out in five-year-intervals since 1992. For the present analysis the latest wave from 2002 was used. A representative sample of 19 706 inhabitants were interviewed by telephone (CATI), of which 16 141 additionally responded to a mailed questionnaire. A total of 11 795 were employed, whereof 1694 were self-employed and thus excluded from analysis, resulting in a final sample size of 10 101 participants. Gender was almost equally distributed, yielding a sample of 5003 female and 5098 male participants.

*Socioeconomic status (SES)*

SES was operationalized according to the Erikson, Goldthorpe and Portocarero (EGP) scheme.[28] It included the employee's position and responsibility at work as well as educational level. For analysis, the 10 original classes were recoded into 5 classes: Class I included higher-grade professionals, Class II lower-grade professionals, administrators and officials, Class III routine non-manual employees in administration and commerce, Class IV skilled manual workers, Class V semi- and unskilled manual workers and agricultural workers. This recoding yielded the following distribution of the study sample: 9.7 % Class I (N = 979), 33.9 % Class II (N = 3420), 26.7 % Class III (N = 2700), 15.6 % Class IV (N = 1577), and 14.1 % Class V (N = 1425).

*Self-rated health (SRH)*

SRH was measured with a single Likert-item (How do you rate your health in general?) on a 5-point scale ranging from very good to very poor. For descriptive and logistic regression analysis, SRH was dichotomized into (very) good SRH and less than good SRH.

Working conditions*:* Items from the Swiss Health Survey selected as valid indicators for a national monitoring on „Work and health in Switzerland" were used for analysis.[20] Physical working conditions were assessed with items for physical strain and exposure to physical disturbances. Physical strain was measured with a single question (Which of the following 4 specifications is correct to describe your physical activity at work?), with a forced choice between mostly sedentary work, a lot of walking, climbing stairs/transporting things and carrying heavy loads. Exposure to physical disturbances was assessed with a multiple-choice list of 14 dichotomized items (yes/no). All single disturbances were added to a sum score. For analysis, the sum score was recoded into four categories (no disturbances, 1–2 disturbances, 3–4 disturbances, >4 disturbances). Psychosocial working conditions comprised measures concerning monotonous work, handling simultaneous and new tasks, and job insecurity. These three items were part of a dichotomous multiple-choice list (yes/no) of items on work characteristics. Job insecurity was assessed with a single Likert-item (Do you have fear of losing your current job?) on a four-point scale: yes – strongly, rather yes, no, rather not, no – not at all. For both descriptive and multivariate analysis, these categories were recoded into three groups: fear, rather no fear, no fear.

Level of employment and demographic variables*:* All analyses in this study were adjusted for age, gender and employ-

**Table 1.** Frequency table for self-related health (SRH), working conditions and socioeconomic class.

| | | Class I | | | Class II | | | Class III | | | Class IV | | | Class V | | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Women | Men | Total | Women | Men | Total | Women | Men | Total | Women | Men | Total | Women | Men | Total | |
| | | % | | | % | | | % | | | % | | | % | | | % |
| **Age** | 20–34 years | 29.7 | 20.6 | **23.3** | 32.1 | 29.1 | **30.7** | 29.8 | 32.8 | **30.6** | 33.3 | 31.6 | **32.0** | 23.7 | 32.0 | **28.4** | **29.8** |
| | 35–49 years | 48.6 | 51.4 | **50.6** | 42.5 | 46.5 | **44.4** | 40.2 | 42.4 | **40.8** | 36.8 | 44.3 | **42.8** | 45.2 | 43.9 | **44.4** | **43.8** |
| | 50–64 years | 21.7 | 28.0 | **26.2** | 25.4 | 24.3 | **24.9** | 30.0 | 24.7 | **28.6** | 29.8 | 24.1 | **25.2** | 31.1 | 24.1 | **27.1** | **26.4** |
| **Employment** | < 50 % | 15.8 | 2.3 | **6.2** | 19.4 | 2.5 | **11.5** | 23.8 | 4.6 | **18.4** | 18.0 | 1.0 | **4.4** | 38.5 | 4.6 | **18.5** | **12.6** |
| | 50–99 % | 37.6 | 7.2 | **16.0** | 39.5 | 9.7 | **25.2** | 34.7 | 8.9 | **27.5** | 23.9 | 3.8 | **7.7** | 29.8 | 6.6 | **16.1** | **21.0** |
| | 100 % | 46.6 | 90.4 | **77.8** | 41.1 | 87.9 | **63.1** | 41.6 | 86.5 | **54.1** | 58.0 | 95.2 | **87.9** | 31.8 | 88.7 | **65.4** | **66.4** |
| **SRH** | (very) good | 93.3 | 95.7 | **95.0** | 89.1 | 92.2 | **90.6** | 89.3 | 91.0 | **89.8** | 87.7 | 90.2 | **89.7** | 85.3 | 89.1 | **87.4** | **90.2** |
| | less than good | 6.7 | 4.3 | **5.0** | 10.9 | 7.8 | **9.4** | 10.7 | 9.0 | **10.2** | 12.3 | 9.8 | **10.3** | 14.7 | 10.9 | **12.6** | **9.8** |
| **Exposure to physical disturbances** | No factors | 33.5 | 34.0 | **33.9** | 26.3 | 23.4 | **25.0** | 21.9 | 19.0 | **21.1** | 22.5 | 7.1 | **10.0** | 20.2 | 8.7 | **13.3** | **21.2** |
| | 1–2 factors | 47.9 | 46.6 | **47.0** | 49.5 | 49.6 | **49.6** | 49.7 | 51.0 | **50.0** | 37.8 | 32.7 | **33.6** | 48.2 | 36.0 | **41.0** | **46.0** |
| | 3–4 factors | 14.0 | 15.6 | **15.2** | 17.8 | 20.1 | **18.9** | 22.0 | 23.1 | **22.3** | 27.0 | 33.8 | **32.5** | 20.7 | 30.0 | **26.3** | **22.3** |
| | > 4 factors | 4.5 | 3.8 | **4.0** | 6.4 | 6.9 | **6.6** | 6.5 | 6.9 | **6.6** | 12.6 | 26.4 | **23.8** | 10.9 | 25.3 | **19.4** | **10.5** |
| **Physical strain** | Mostly sedentary work | 58.8 | 74.3 | **69.8** | 33.2 | 54.2 | **43.0** | 56.1 | 49.1 | **54.2** | 36.9 | 12.7 | **17.3** | 15.9 | 16.2 | **16.1** | **41.8** |
| | A lot of walking | 32.8 | 20.0 | **23.7** | 47.8 | 33.6 | **41.2** | 31.6 | 29.3 | **31.0** | 41.1 | 25.8 | **28.7** | 47.7 | 22.4 | **32.5** | **33.7** |
| | Climbing stairs / transport | 7.1 | 4.5 | **5.3** | 14.9 | 8.8 | **12.0** | 11.1 | 16.3 | **12.5** | 18.7 | 30.9 | **28.6** | 28.0 | 25.6 | **26.6** | **15.6** |
| | Carrying heavy loads | 1.3 | 1.2 | **1.2** | 4.1 | 3.4 | **3.8** | 1.1 | 5.4 | **2.3** | 3.3 | 30.6 | **25.4** | 8.4 | 35.7 | **24.8** | **8.8** |
| **Job insecurity (fear of losing job)** | fear | 11.5 | 8.6 | **9.4** | 9.4 | 10.7 | **10.0** | 10.8 | 10.8 | **10.8** | 15.5 | 16.1 | **16.0** | 16.1 | 11.4 | **13.3** | **11.4** |
| | rather no fear | 41.4 | 48.4 | **46.3** | 41.3 | 48.9 | **44.8** | 47.0 | 52.3 | **48.4** | 43.2 | 44.3 | **44.1** | 42.6 | 46.2 | **44.8** | **45.8** |
| | no fear | 47.1 | 43.0 | **44.2** | 49.4 | 40.4 | **45.2** | 42.2 | 36.9 | **40.7** | 41.3 | 39.6 | **39.9** | 41.3 | 42.4 | **42.0** | **42.8** |
| **Monotonous work** | yes | 3.7 | 3.6 | **3.6** | 7.8 | 5.6 | **6.8** | 14.1 | 12.0 | **13.5** | 19.2 | 13.6 | **14.7** | 19.7 | 16.5 | **17.8** | **10.7** |
| | no | 96.3 | 96.4 | **96.4** | 92.2 | 94.4 | **93.2** | 85.9 | 88.0 | **86.5** | 80.8 | 86.4 | **85.3** | 80.3 | 83.5 | **82.2** | **89.3** |
| **Handling simultaneous tasks** | yes | 72.8 | 81.3 | **78.8** | 70.9 | 71.7 | **71.3** | 65.4 | 67.9 | **66.1** | 53.5 | 61.2 | **59.8** | 47.8 | 51.9 | **50.3** | **66.5** |
| | no | 27.2 | 18.7 | **21.2** | 29.1 | 28.3 | **28.7** | 34.6 | 32.1 | **33.9** | 46.5 | 38.8 | **40.2** | 52.2 | 48.1 | **49.7** | **33.5** |
| **Handling new tasks** | yes | 66.7 | 82.0 | **77.4** | 65.7 | 78.2 | **71.5** | 53.6 | 68.3 | **57.6** | 46.0 | 61.7 | **58.8** | 42.7 | 57.3 | **51.5** | **64.2** |
| | no | 33.3 | 18.0 | **22.6** | 34.3 | 21.8 | **28.5** | 46.4 | 31.7 | **42.4** | 54.0 | 38.3 | **41.2** | 57.3 | 42.7 | **48.5** | **35.8** |
| **Total Percentage %** | | 5.7 | 13.6 | **9.7** | 36.4 | 31.3 | **33.9** | 39.1 | 14.6 | **26.7** | 6.4 | 24.7 | **15.6** | 12.4 | 15.8 | **14.1** | |
| **N** | | 285 | 694 | **979** | 1822 | 1598 | **3420** | 1957 | 743 | **2700** | 318 | 1259 | **1577** | 621 | 804 | **1425** | **10101** |

Data source: SGB 2002

**Table 2.** Correlation matrix for job-specific variables.

| | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| 1. Exposure to physical disturbances | 1 | .305** | –.135** | –.170** | –.071** | –.080** |
| 2. Physical Strain | .305** | 1 | –.004 | .047** | .072** | .069** |
| 3. Job insecurity | –.135** | –.004 | 1 | .062** | .006 | .023* |
| 4. Monotonous work | –.170** | –.047** | .062** | 1 | –.046** | –.044** |
| 5. Handling simultanous tasks | –.071** | .072** | .006 | –.046** | 1 | .224** |
| 6. Handling new tasks⁄ | –.080** | .069** | .023* | –.044** | .224** | 1 |

*p <0.05 level (2-tailed); ** p <0.01 (2-tailed). Data source SGB 2002

ment. Age was recoded into three categories: 20–34 years, 35–49 years and 50–64 years. Level of employment (<50 %, 50–99 %, 100 %) is an indicator for time of exposure with respect to working conditions and was added to the analysis to control for differences between full-time and part-time employees.

*Statistical analyses*

In a first step tables of frequencies stratified by socioeconomic classes were computed to analyze the gradient of different working conditions and SRH with respect to SES. In a second step multivariate logistic regression analyses were performed and adjusted odds ratios (OR) were calculated to examine the association between less than good SRH and SES. The first model examined the influence of SES on SRH only. Subsequently, separate models including physical working conditions (model 2) and psychosocial working conditions (model 3) were computed. Model 4 included both psychosocial and physical working conditions. For models 5 to 8 separate analyses for men and women were performed, based on models 1 and 4. All models were adjusted for level of employment and age, whereas models 1 to 4 additionally were adjusted for gender.

## Results

The descriptive analysis showed that both SRH and working conditions were related to SES as expected (Tab. 1). The proportion of employees with (very) good SRH slightly increased for higher SES, whereas strong exposure to physical disturbances, physical strain, job insecurity, and monotonous work tend to decrease for higher SES. Only handling simultaneous and new tasks increased with SES. Additionally, sedentary work increased for higher SES, as in Class V only 16.1 % compared to 69.8 % in Class I had jobs with mostly sedentary work.

As a preliminary step for the logistic regression analyses, correlations between job-specific variables were computed (Tab. 2). As can be seen in Table 2 almost all of the job-specific variables are significantly correlated. However, only for two of these correlations the coefficient was greater than .2.

Multivariate logistic regression analyses showed how and to what extent the social gradient in SRH is weakening by introducing physical and psychosocial working conditions step by step in the analysis.

Model 1: According to the base model (Tab. 3), SRH was significantly associated with SES (adjusted for age, gender, and level of employment). Employees of Class V had a 168 %, Class IV a 135 % and Class III and II an 87 % higher risk of having less than good SRH than employees of Class I. Employees of Class II did not significantly differ from Class III employees with respect to less than good SRH.

Model 2: Compared to unexposed employees, the adjusted odds ratios regarding less than good SRH were aOR = 1.77 for employees with exposure to 3–4 physical disturbances and aOR = 2.45 for employees with exposure to >4 disturbances (Tab. 3). Carrying heavy loads enhanced the risk for less than good SRH by 42 % compared to employees doing mostly sedentary work. Taken together, physical disturbances and physical strain explained a large part of the social gradient in SRH. Regarding SRH, only Class I employees still significantly differed from the other employees.

Model 3: Handling simultaneous tasks or new tasks was not related to SRH. However, both job insecurity and monotonous work highly increased the risk for less than good SRH (Tab. 3). Job insecurity (fear of losing the job) almost doubled (aOR = 1.85) the risk for having less than good SRH compared to employees not fearing to loose their job. The inclusion of these two psychosocial working conditions did not have the same effect on the social gradient as physical working conditions had in model 2, as there are mixed results with respect to SRH for SES classes.

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**Table 3.** Adjusted Odds Ratios and confidence interval (95 %) for "less than good self-rated health (SRH)" by socio-economic status and working conditions, adjusted for age, gender and employment (models 1 to 4).

| | Model 1 | | Model 2 | | Model 3 | | Model 4 | |
|---|---|---|---|---|---|---|---|---|
| | OR | 95 %–CI | OR | 95 %–CI | OR | 95 %–CI | OR | 95 %–CI |
| **Socio-economic status** | | | | | | | | |
| Class I | 1.00 | | 1.00 | | 1.00 | | 1.00 | |
| Class II | 1.87** | 1.36–2.56 | 1.49* | 1.06–2.10 | 1.69** | 1.20–2.38 | 1.55* | 1.09–2.19 |
| Class III | 1.87** | 1.35–2.59 | 1.48* | 1.04–2.11 | 1.58* | 1.10–2.25 | 1.40 | 0.92–2.02 |
| Class IV | 2.35** | 1.67–3.29 | 1.59* | 1.08–2.35 | 2.09** | 1.43–3.05 | 1.51* | 1.01–2.26 |
| Class V | 2.68** | 1.92–3.75 | 1.60* | 1.08–2.38 | 1.99** | 1.35–2.93 | 1.50 | 0.99–2.27 |
| **Physical working conditions** | | | | | | | | |
| Exposure to phys. disturbances | | | | | | | | |
| No disturbance | | | 1.00 | | | | 1.00 | |
| 1–2 dist. | | | 1.14 | 0.90–1.43 | | | 1.08 | 0.85–1.37 |
| 3–4 dist. | | | 1.77** | 1.38–2.29 | | | 1.64** | 1.26–2.15 |
| >4 dist. | | | 2.45** | 1.81–3.31 | | | 2.21** | 1.61–3.04 |
| Physical strain | | | | | | | | |
| Sedentary work | | | 1.00 | | | | 1.00 | |
| Walking | | | 1.13 | 0.93–1.37 | | | 1.12 | 0.92–1.37 |
| Climbing stairs | | | 0.94 | 0.72–1.21 | | | 0.93 | 0.71–1.21 |
| Heavy loads | | | 1.42* | 1.05–1.92 | | | 1.49* | 1.09–2.05 |
| **Psychosocial working conditions** | | | | | | | | |
| Job insecurity (fear of losing job) | | | | | | | | |
| Fear | | | | | 1.85** | 1.46–2.36 | 1.69** | 1.31–2.16 |
| Rather No fear | | | | | 1.25* | 1.04–1.49 | 1.21* | 1.01–1.46 |
| No fear | | | | | 1.00 | | 1.00 | |
| Monotonous work | | | | | | | | |
| Yes | | | | | 1.53** | 1.21–1.93 | 1.35* | 1.06–1.71 |
| No | | | | | 1.00 | | 1.00 | |
| Handling simultanous tasks | | | | | | | | |
| Yes | | | | | 1.08 | 0.91–1.29 | 1.07 | 0.89–1.28 |
| No | | | | | 1.00 | | 1.00 | |
| Handling new tasks | | | | | | | | |
| Yes | | | | | 0.97 | 0.81–1.15 | 0.92 | 0.77–1.11 |
| No | | | | | 1.00 | | 1.00 | |

*p < 0.05; **p < 0.01.
Data source: SGB 2002

Model 4: This model examined the combined contribution of both physical and psychosocial working conditions (Tab. 3). The adjusted odds ratios for physical and psychosocial working conditions added in model 2, respectively in model 3 mostly remained stable. The inclusion of both kinds of working conditions resulted in a substantial reduction of the social gradient in SRH.

With respect to the adjusted demographic variables, model 1–4 showed significant differences (not shown in Tab. 3). In comparison to men, women faced a higher risk of less than good SRH (aOR = 1.31). Concerning age, 20–34 year (aOR = .50) and 35–49 year (aOR = .57) old employees had a reduced risk for having less than good SRH compared to 50–64 year old employees. Throughout all four models, employees working part-time between 50 and 99 % were at greater risk for less than good SRH compared to full-time employees (aOR = 1.36).

Models 5 to 8: Differentiated models confirmed for both genders the main finding of the social gradient in SRH being ex-

**Table 4.** Adjusted Odds Ratios and confidence interval (95 %) for "less than good self-rated health (SRH)" by socio-economic status and working conditions, adjusted for age, gender and employment (models 1 to 4).

| | Model 5 (Women) | | Model 6 (Men) | | Model 7 (Women) | | Model 8 (Men) | |
|---|---|---|---|---|---|---|---|---|
| | OR | 95 %–CI | OR | 95 %–CI | OR | 95 %–CI | OR | 95 %–CI |
| **Socio-economic status** | | | | | | | | |
| Class I | 1.00 | | 1.00 | | 1.00 | | 1.00 | |
| Class II | 1.66* | 1.01–2.71 | 1.96** | 1.29–2.97 | 1.47 | 0.85–2.54 | 1.59* | 1.00–2.54 |
| Class III | 1.57 | 0.96–2.56 | 2.27** | 1.44–3.60 | 1.20 | 0.69–2.08 | 1.92* | 1.14–3.22 |
| Class IV | 1.89* | 1.05–3.39 | 2.77** | 1.81–4.23 | 1.31 | 0.64–2.66 | 1.74* | 1.03–2.93 |
| Class V | 2.42** | 1.43–4.09 | 2.88** | 1.85–4.47 | 1.58 | 0.84–2.96 | 1.41 | 0.80–2.48 |
| **Physical working conditions** | | | | | | | | |
| Exposure to phys. disturbances | | | | | | | | |
| No disturbance | | | | | 1.00 | | 1.00 | |
| 1–2 dist. | | | | | 1.17 | 0.86–1.59 | 0.90 | 0.61–1.33 |
| 3–4 dist. | | | | | 1.64** | 1.15–2.35 | 1.51* | 1.00–2.27 |
| >4 dist. | | | | | 2.69** | 1.73–4.18 | 1.77** | 1.11–2.83 |
| Physical strain | | | | | | | | |
| Sedentary work | | | | | 1.00 | | 1.00 | |
| Walking | | | | | 1.20 | 0.93–1.55 | 1.02 | 0.74–1.41 |
| Climbing stairs | | | | | 0.95 | 0.67–1.36 | 0.90 | 0.58–1.36 |
| Heavy loads | | | | | 1.23 | 0.67–2.25 | 1.67* | 1.11–2.53 |
| **Psychosocial working conditions** | | | | | | | | |
| Job insecurity (fear of losing job) | | | | | | | | |
| Fear | | | | | 2.09** | 1.49–2.93 | 1.29 | 0.88–1.87 |
| Rather No fear | | | | | 1.34* | 1.05–1.72 | 1.10 | 0.84–1.45 |
| No fear | | | | | 1.00 | | 1.00 | |
| Monotonous work | | | | | | | | |
| Yes | | | | | 1.13 | 0.81–1.57 | 1.63** | 1.14–2.32 |
| No | | | | | 1.00 | | 1.00 | |
| Handling simultanous tasks | | | | | | | | |
| Yes | | | | | 1.08 | 0.84–1.38 | 1.02 | 0.77–1.34 |
| No | | | | | 1.00 | | 1.00 | |
| Handling new tasks | | | | | | | | |
| Yes | | | | | 0.91 | 0.71–1.15 | 0.96 | 0.73–1.28 |
| No | | | | | 1.00 | | 1.00 | |

*p <0.05; **p <0.01.
Data source: SGB 2002

plained to a large extent by physical and psychosocial working conditions. In men as well as in women, adjusted odds ratios for socioeconomic classes II to V (in comparison with class I) were significantly reduced when introducing physical and psychosocial working conditions into the model. In women effect of class affiliation not even remained significant, whereas in men employees affiliated to classes II to IV compared to those in Class I still had a significant higher risk of having moderate or (very) poor SRH. For men and women, the "dose-response" relationship of class affiliation and SRH (that is the social gradient in SRH) totally disappeared.

Additionally, separate analyses for women and men (Tab. 4) showed remarkable gender differences concerning work-related determinants of SRH. Significant effects of exposure to accumulated physical disturbances (>4) and SRH for both gender were found, but with a larger effect for women than for men (aOR = 2.69 vs. aOR = 1.77). For men, carrying heavy loads (aOR = 1.67) and monotonous work (aOR = 1.63)

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were further associated with less than good SRH, whereas for women, job insecurity (fear of losing the job) had a significant negative effect on SRH (aOR = 2.09). Concerning the social gradient in SRH, the inclusion of all working conditions variables resulted in a reduction of the social gradient in SRH, for both men and women.

## Discussion

The central concern of this study was to identify the role of working conditions with regard to health inequalities, particularly in the relationship of socioeconomic status (SES) and self-rated health (SRH). Addressing the first two research questions, descriptive analysis ascertained the social gradient in SRH as well as for physical and psychosocial working conditions, confirming findings by Kristensen et al. [21] As could be seen in the correlation matrix there are associations between almost all of the job-specific variables. However, the common variance for these variables only varies between 0 to 10 %. The subsequent logistic regressions analyses adjusted for age, gender, and employment could show that SES was clearly associated with SRH: lower socioeconomic status was mostly associated with a higher risk for less than good SRH.

With respect to the association between working conditions and SRH, the study showed that both physical and psychosocial work demands independently predicted reduced SRH. Regarding the two psychosocial working conditions, handling simultaneous or handling new tasks, no association could be found with SRH. Probably, these factors do not only imply high job demands but also high job resources such as task variety. Furthermore, handling simultaneous and new tasks requires a certain level of job control. Job-related resources such as job control or contractual reciprocity have shown to be important health protectors.[17]

Regarding the third research question, it could be shown that physical and psychosocial working conditions explained to a large extent the social gradient in self-rated health in the present study sample. These findings are consistent with Schrijvers et al.,[22] who demonstrated that a substantial part of the association between occupational class and SRH could be explained by physical working conditions and job control. Additionally, Borell et al.[15] could show that work organization variables such as physical and psychosocial hazards and job insecurity contributed to the explanation of socioeconomic inequalities. Furthermore, Borg and Kristensen[20] could show, that almost two thirds of the social gradient with regard to worsening of SRH could be explained by the work environment and life style factors. The little explanatory power of psychosocial demands in the present study probably can be explained by the lack of measures on job control as a strong predictor of health at work.

Regarding the fourth research question, no differences between men and women could be found in terms of explaining or reducing the social gradient in SRH while physical and psychosocial working conditions were included in the logistic regression models. Unless it turned out that in men unlike in women the effect of affiliation to a lower class (II–IV) still remained significant as a risk factor for SRH. However, except for physical disturbances, different sub-dimensions of the mentioned working conditions were associated with reduced SRH for both gender. This emphasizes the importance of performing separate, gender-specific analyses in future work-related studies, as suggested by aforementioned studies.[14,15,22]

However the study had some methodological limitations. Self-rated health (SRH) as dependent variable is a rather unspecific indicator of health. On the other hand, other studies could show that SRH is a good predictor for future morbidity and mortality.[23,24] Furthermore, the use of cross-sectional data in this study limits causal conclusions, which can be overcome by future longitudinal studies. Finally, the measures for working conditions in the Swiss Health Survey are limited in scope and methodology.[27] Nevertheless, they still substantially explain the SES gradient of SRH and the study could show a social gradient for both SRH and working conditions, which is consistent with other international studies.[15,20,22]

In conclusion, the study operated with representative data, making the results generalizable to the entire Swiss working population and thus offering an important contribution to work related health research in Switzerland. Overall, the study confirmed the relevance of modifiable physical and psychosocial working conditions for explaining the social gradient of self-rated health (SRH). Improving working conditions in low SES groups has a high potential for reducing the social gradient of health and for producing a large health gain in the overall working population. Improving psychosocial working conditions has shown to enhance business performance as well,[29] making e.g. comprehensive worksite health promotion simultaneously a health and productivity initiative. Future studies should especially address the gender issue regarding physical and psychosocial working conditions in the relationship of socioeconomic status and self-rated health.

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